

Objectives:

- Students will learn that all pollution can not be seen. Some pollution is easily visible, but others are invisible.
- Students will learn that although dilution is one way of dealing with pollution, it will never eliminate all the pollution or contaminate.

Materials:

Large, clear beaker (approx. 1000ml)
Food Coloring (“Contaminate”)
Calculators (optional)

Anticipatory Set:

- Discuss with students what things would be considered pollution (pesticide run-off, industrial chemicals, soil erosion, fertilizer run-off, grass clippings, etc.)
- Ask students if you can see pollution in the water. (Sometimes. Grass clippings and soil are visible in the water; grass clippings and soil can increase the turbidity of the water making the water cloudy or brown colored. Other chemical pollutants are not visible; chemicals like pesticides, fertilizers, and industrial wastes are often invisible in water).

Procedure:

- Begin by pouring 125 ml of water into the large, clear beaker.
- Add one drop of “contaminate” (food coloring); approx. 0.05ml. Have students note the color change of the water.
- Add an additional 125 ml of water.
- Continue adding 125 ml of water to the large, clear beaker. Do this until none of the food coloring can be seen.

Summary:

- Ask students if because they can no longer see the food coloring it is gone? (No, it is extremely diluted, but it is still there.)
- Have students calculate the concentration of the “contaminate” (food coloring) final solution. They will find out, that although the “contaminate” is diluted, it is not completely gone from the water.
- Discuss with students the problem with using dilution as a solution to pollution. Even if the pollution is diluted, it is still in the water. Animals living in the water, drinking the water, or eating the animals living in the water will retain the contaminate in their bodies. Over time, this contaminate will become concentrated causing illness or even death.